REMARKS:

This paper is herewith filed in response to the Examiner's Office Action mailed on February 19, 2008 for the above-captioned U.S. Patent Application. This office action is a rejection of claims 1-7, 9, and 12-37 of the application.

More specifically, the Examiner has rejected claims 1-2, 5-7, 23, 29-31, and 34-37 under 35 USC 103(a) as being unpatentable over Kornfeld (US5974041) in view of Chethik (US6593827); rejected claims 3-4 and 25-27 under 35 USC 103(a) as being unpatentable over Chethik in view of Kornfeld, and further in view of Nguyen (US6148040); rejected claims 9 and 24 under 35 USC 103(a) as being unpatentable over Kornfeld in view of Chethik and Porco (US7020215); rejected claims 12-17, 22, and 32-33 under 35 USC 103(a) as being unpatentable over Hosur (20030152023) in view of Kornfeld and Chethik; and rejected claims 18-19 and 28 under 35 USC 103(a) as being unpatentable over Hosur in view of Chethik, Kornfeld, and Nguyen. The Applicants respectfully disagree with the rejections.

In addition, the Applicants note that the Examiner has indicated that claims 10-11 and 38-41 are objected to as depending upon a rejected base claim but would be allowable if rewritten in independent form including all the limitations of the base claims. The Applicants thank the Examiner for the notice of allowable subject matter.

Claims 13, 16-17, and 38 have been amended for clarification. Claims 14-15, 18-22, 32-33, and 39 have been amended accordingly. Claim 42 has been added. Support for the new claim can be found at least on page 8 lines 2-22 and figures 4A and 4B. No new matter is added.

Regarding the rejection of claim 1 the Applicants submit that as cited Kornfeld discloses that A1-A4 amplifier stages are **biased to provide identical linear gain** (col. 5, lines 11-12). Whereas, claim 1 recites that each n^{th} discrete amplitude amplifier is adapted to apply a gain **that is unique** as compared to all other of the discrete amplitude amplifiers.

As cited Kornfeld discloses:

> "the amplifier stage A1 is biased so as to provide approximately 28 dB of linear gain for output power of up to 5 dBm in response to input signals of up to -23 dBm. Similarly, the amplifier stages A2, A3 and A4 are **each biased to produce the same linear gain** as stage A1 over different output signal ranges," (emphasis added), (col. 5, lines 14-19); and
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> "Specifically, in the exemplary embodiment of FIG. 3 the amplifier stage A2 produces output signal energy over the range of 5-15 dBm **in response to input signals** between -23 to -13 dBm, while amplifier stages A3 and A4 provide output signal energy of between 15-24 dBm and 24-28 dBm **for input signals** between -13 to -4 dBm and -4 to +1 dBm, respectively," (emphasis added), (col. 5, lines 19-25).

In Kornfeld different input signals are directed to different amplifier stages based upon the input signal dBm. Thus, the output signal energy level of the amplifier stage in Kornfeld varies depending on the input signal. However, as stated above Kornfeld discloses that the gain of each of the amplifier stages A1-A4 is the same. Clearly, the amplifier stages A1-A4 in Kornfeld can not be seen to be applying a gain that is **unique** as compared to all other amplifiers as in claim 1.

The Applicants contend that Kornfeld can not be seen to disclose or suggest at least where claim 1 recites "each n^{th} discrete amplitude amplifier adapted to apply a gain that is **unique as compared** to all other of the discrete amplitude amplifiers."

Further, in the rejection of claim 1 the Examiner states:

> "Kornfeld does not disclose, however, that every discrete amplitude amplifier is coupled to a separate modulator. However, one skilled in the art is aware that any invention may be implemented by any of a plurality of embodiments. Furthermore, Chethik illustrates, in strictly analogous art, an alternative embodiment of a power synthesizer (fig. 1). Chethik suggests, after passing data through an actuator (fig. 1, ref. 15), pairing one modulator (i.e. fig. 1, ref. 12) in series with each of a plurality of modulators (fig. 1, ref. 13). Therefore, it would have been obvious to one having ordinary skill in the art at the time which the invention was made that Kornfeld's single modulator (which is not shown) could

> be divided into a plurality of modulators each applied in series with one of Kornfeld's amplifiers as suggested by Chethik because such alternative embodiments are well known and ubiquitous in the art and one skilled in the art would have found it obvious to try alternative embodiments as a matter of design preference."

The Applicants respectfully disagree with the Examiner's assertion that one skilled in the art would have found it obvious to try this asserted "alternative embodiment" of adding modulators in line with each amplifier of Kornfeld as a matter of mere design preference. The Applicants submit that adding a modulator in line with each amplifier in Kornfeld would at least improperly change the principal operation and require extensive modification of Kornfeld.

As cited Kornfeld discloses:

> "**a digitally-modulated RF communication signal, is received by an input network 44** from an RF transmit modulator (not shown). The **input network 44 relays the input signal** to at least one of an exemplary set of four parallel amplifier stages A1-A4," (emphasis added), (col. 4, lines 49-53).

As stated above Kornfeld discloses that **the digitally-modulated RF communication input signal** received by the input network 44 is **relayed** to one of the parallel amplifier stages A1-A4.

In addition, Kornfeld discloses:

> "As is indicated by FIG. 2, **timing information relating to boundaries between the digital words or symbols inherent within the digitally-modulated input signal** is provided to switch logic 56 from the local control processor," (emphasis added), (col. 5, lines 64-67); and
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> "the switch logic 56 only instructs the input network 44 and output network 48 **to select a different one of the amplifier stages A1-A4 during transitions between the digital words or symbols within the input signal**.,"(emphasis added), (col. 6, lines 1-5).

Thus, it can be seen that in Kornfeld the input network 44 selectively provides the received digitally modulated input signal to one of the amplifier stages **during transitions** between the digital words or signals within the input signal based on instructions from the switch logic 56.

The Applicants note that Chethik relates to modulating an array transmitter autocalibration system 20 used to gain-balance and phase-balance parallel amplifier stages 11 for coherent **combining** (col. 2, lines 45-47).

Chethik discloses:

> "Data bits input to the modulating array transmitter 10 are supplied to a bit-to-symbol mapper 15 whose outputs are input to the plurality of quadrature power elements 11. Each quadrature power element 11 has an on/off keying input for receiving an on/off keying bit input signal that selectively keys the modulator on and off, and a local oscillator input (LO) for receiving a reference input signal," (col. 3, lines 1-10); and
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> "A pair of quadraphase power elements 11 is selected 31, one of which is adjusted, the other of which is held constant. A random decision 32 is made to dither either the gain or the phase of the selected quadraphase power element 11. If the previous gain (phase) dither increases the error magnitude, the sign of the dither is reversed 33. The gain (phase of the selected quadraphase power element 11 is adjusted 34 by the small dither amount (positive or negative)," (col. 4, lines 11-18).

The Applicants submit that in Chethik the quadraphase power elements 11 appear to require a separate modulator in order to implement a dither of the gain or phase of the **selected** quadrature power element 11.

In regards to the proposed combination of Chethiks modulator design with Kornfeld the Applicants note that as stated above Kornfeld discloses a digitally-modulated RF communication signal input **already** modulated by an RF transmit modulator (**not shown**) to a network 44. Further, as stated above the network 44 then **selectively relays** the modulated input signal to one of the amplifier stages A1-A4 based on the dBm of the input signal and during transitions between the digital words or signals within the input signal. Clearly, modifying Kornfeld to include separate modulators in series with the amplifier stages as in Chethik would make Kornfeld inoperable for its intended purpose. Such a modification would require a complete redesign of components of Kornfeld including the input network 44, the switch logic 56, and the

amplifier stages A1-A1. In addition, such a modification would require substantial added costs for components and circuitry previously not required to enable Kornfeld. The Applicants submit that for at least the reasons stated, such a proposed modification of Kornfeld in view of Chethik would at least improperly change the principal operation and require extensive modification of Kornfeld.

MPEP 2143.01 recites:

> **"THE PROPOSED MODIFICATION CANNOT CHANGE THE PRINCIPLE OF OPERATION OF A REFERENCE"**
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> "If the proposed modification or combination of the prior art would change the principle of operation of the prior art invention being modified, then the teachings of the references are not sufficient to render the claims *prima facie* obvious. *In re Ratti*, 270 F.2d 810, 123 USPQ 349 (CCPA 1959) (Claims were directed to an oil seal comprising a bore engaging portion with outwardly biased resilient spring fingers inserted in a resilient sealing member. The primary reference relied upon in a rejection based on a combination of references disclosed an oil seal wherein the bore engaging portion was reinforced by a cylindrical sheet metal casing. Patentee taught the device required rigidity for operation, whereas the claimed invention required resiliency. The court reversed the rejection holding the **"suggested combination of references would require a substantial reconstruction and redesign of the elements shown in [the primary reference] as well as a change in the basic principle under which the [primary reference] construction was designed to operate**." 270 F.2d at 813, 123 USPQ at 352.)." (emphasis added).

The Applicants contend that for at least these reasons the rejections in the Office Action citing a combination of Kornfeld and Chethik are not seen to be proper.

Further, the Applicants note that in a previous final Office Action dated September 12, 2007 the Examiner agreed that in Chethik **equal gains are applied at each stage** as compared to other stages and any difference in amplification among the parallel stages 11 of Chethik is by the adjustment circuit 14, which operates on only one stage at a time (col. 3, lines 55-60 and col. 4, lines 4-18).

The Applicants submit that for at least the reasons stated such a combination, though not agreed with as proper, would still not disclose or suggest claim 1.The Applicants contend that for at least the reasons stated the rejection of claim 1 should be removed.

Regarding the rejection of independent claim 13 the Examiner states:

> "Regarding claim 13, Hosur discloses a transmitter (fig. 2) comprising, in series, an encoder (12), a serial to parallel converter (18), a parallel to serial converter (22) for outputting a digital signal at baseband, and at least one transmit antenna (AT_{TX}). **Hosur discloses an RF front end power amplifier (fig. 2, ref. 26) but does not explicitly disclose a power synthesizer block comprising at least two discrete amplifier stages in parallel, a gain that differs from that applied by each other discrete amplitude amplifier. However, Kornfeld in view of Chethik disclose such a power synthesizer block as applied to claim 1 above**. Further, the advantage to the power synthesizer of Kornfeld in view of Chethik is the highly linear amplifier output created over a wide range. Therefore, it would have been obvious to one having ordinary skill in the art at the time which the invention was made that the RF front end amplifier of Hosur (i.e. fig. 2, ref. 26) could be replaced by the power synthesizer block of Kornfeld in view of Chethik because it provides an exemplary amplifier with a wide linear range of operation," (emphasis added).

It is noted that in the rejection the Examiner admits that Hosur does not disclose **at least two discrete amplifier stages in parallel, a gain that differs from that applied by each other discrete amplitude amplifier**. Further, the Examiner indicates that Kornfeld in view of Chethik addresses this shortfall of Hosur. The Applicants disagree with the Examiner. Further, although the Applicants do not acquiesce to the remainder of the rejection the Applicants contend that for at least the reasons already stated the references cited, alone or combined, can not be seen to disclose or suggest at least where claim 13 recites "a power synthesizer block comprising at least two discrete amplifier stages in parallel, each stage disposed between the parallel to serial converter, and **each discrete amplifier stage comprises a discrete amplitude amplifier configured to apply a gain that differs from that applied by each other discrete amplitude amplifier**." For at least this reason the rejection of claim 13 should be removed.

Regarding the rejection of claim 23 the Examiner states:

> Regarding claim 23, Kornfeld in view of Chethik disclose the limitations of the claim as applied to claim 1 above. Specifically, the "modulating" of claim 1 covers the claimed "controlling a phase" of claim 23, and Kornfeld's output network (fig. 2, ref. 48) performs combining the *"n* phase controlled and amplified bits" in a "circuit matter".

The Applicants disagree with the Examiner. The Applicants contend that for at least the reasons already stated the references cited can not be seen to disclose or suggest at least where claim 23 recites "for each of the *n* parallel inputs, controlling a phase of the input bit and **amplifying by an n^{th} discrete amplitude amplifier a power of the input bit at a power that is unique respecting all other *n* parallel inputs**." For at least this reason the Examiner is respectfully requested to remove the rejection of claim 23.

In the rejection of independent claim 36 the Examiner states "Regarding claim 36, Kornfeld in view of Chethik disclose the limitations of the claim as applied to claim 1 above." The Applicants disagree with the Examiner.

The Applicants contend that for at least the reasons already stated the references cited can not be seen to disclose or suggest at least where claim 36 recites "wherein each of the *n* amplitude amplifying means is for **applying a gain that is unique as compared to all other of the *n* amplitude amplifying means**." Thus, the rejection of claim 36 should be removed.

In addition, for at least the reasons that claims 2, 12 and 30-31; claims 14-22, 32-33, and 42; claims 24-29, 34-35; and claim 37 depend from claims 1, 13, 23, and 36, respectively, the references cited are not seen to disclose or suggest these claims. Thus, the rejections of these claims should be removed.

Based on the above explanations and arguments, it is clear that the references cited cannot be seen to disclose or suggest claims 1-7, 9, 12-37, and 42. The Examiner is respectfully requested

to reconsider and allow all of the pending claims 1-7, 9, 12-37, and 42 as now presented for examination.

For all of the foregoing reasons, it is respectfully submitted that all of the claims now present in the application are clearly novel and patentable over the prior art of record. Should any unresolved issue remain, the Examiner is invited to call Applicants' attorney at the telephone number indicated below.

Respectfully submitted:

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July 9, 2008

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